

## **REMARKS**

The office action of July 22, 2005 has been reviewed and its contents carefully noted. Reconsideration of this case, as amended, is requested. Claims 1-5 remain in this case, claim 6-9 being cancelled by this response. The Applicant reserves the right to pursue claims 7 through 9 in one or more divisional applications.

Claim 1 was amended to clarify the subject matter being claimed. Support for the amendments made to claim 1 are found in Figures 1, 2, and 3 and page 5, lines 16-23. No new matter has been entered.

Claim 4 was also amended to clarify the subject matter being claimed. No new matter has been entered.

The numbered paragraphs below correspond to the numbered paragraphs in the Office Action.

### **Objections to the Drawings**

5. The drawings were objected to under 37 CFR 1.83(a) for failing to show every feature of the invention specified in the claims, more specifically the fasteners.

While the Applicant respectfully disagrees, Applicant has cancelled claim 6, which includes fasteners, in order to further prosecution. Reconsideration and withdrawal of the objection are respectfully requested.

### **Rejection(s) under 35 U.S.C. §112**

7. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Applicant respectfully disagrees, but has amended claim 1, from which claim 2 depends to clarify the subject matter being claimed. Claim 1 has been amended to read, in part

"A sprocket for a silent chain having a plurality of link plates comprising a plurality of teeth around a periphery of the sprocket, each of the plurality of teeth comprising:"

Claim 2 states "The sprocket of claim 1, wherein each of the side portions has a width approximately equal to a thickness of an outer most link plate of the silent chain." Claim 2 is further defining the side portions of the teeth of a sprocket in relation to the silent chain it is used with. The link plate is not part of the sprocket.

Applicant believes that these amendments have fully addressed the Examiner's rejections, and the claims are now in condition for allowance. Reconsideration and withdrawal of the rejection are respectfully requested.

#### **Rejection(s) under 35 U.S.C. §102**

9. Claims 1-3, 5 and 6 were rejected under 35 U.S.C. 102(b) as being anticipated by Thompson (US 2,179,967). Applicant respectfully disagrees with the rejection.

Thompson discloses a gear wheel with teeth that have a reinforcing member or a cap that covers the entire tooth, after the tooth has been formed. The reinforcing member surrounds the entire outer profile of the tooth. The reinforcing member has a first hardness and the tooth underneath the reinforcing member or cap has a second hardness. The second hardness of the tooth itself is not exposed.

Applicant's teeth of amended claim 1 have a tooth profile with a surface for contacting the plurality of link plates of a silent chain with:

"a first side portion having a first hardness on one side of a central portion having a second hardness, and a second side portion with the first hardness on a side of the central portion, opposite the first side portion, wherein the first hardness is greater than the second hardness and wherein the first side portion and the second side portion comprise the surface for contacting the plurality of link plates of the silent chain."

Thompson fails to disclose a tooth profile with a surface for contacting a chain with a first side portion having a first hardness, and a second side portion with the first hardness on a side of the central portion with a second hardness, opposite the first side portion, as required in Applicant's amended claim 1.

Therefore, it is respectfully suggested that the rejection of independent claim 1 as being anticipated by Thompson (US 2,179,967) is overcome. Dependent claims 3-5, being dependent upon and further limiting independent claim 1, should also be allowable for that reason, as well as for the additional recitations they contain. Reconsideration and withdrawal of the rejection are respectfully requested.

### **Rejection(s) under 35 U.S.C. §103**

11. Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson (US 2,179,967) in view of Cole et al. (US 5,711,187).

Applicant respectfully disagrees, and believes the claims, as amended, are patentable over Thompson (US 2,179,967) and Cole et al. (US 5,711,187), individually and in combination, for the reasons given above in respect to the section 102 rejection of claim 1, from which claim 4 depends. The argument above as to the novelty of claim 1 is repeated here by reference.

Thompson teaches a gear wheel with teeth that have a reinforcing member that covers the entire tooth like a cap after the tooth has been formed. The reinforcing member surrounds the entire outer profile of the tooth. The reinforcing member has a first hardness and the tooth underneath the reinforcing member or cap has a second hardness. The second hardness of the tooth is not exposed.

Cole et al. discloses a method of forming a gear wheel that applies surface densification to the flank, the root and the flank, or only the root of the teeth in the radial direction. The densification of the tooth resulting in a region of increased hardness in the radial direction, on the surface only. The hardness is reduced from the surface of the flank or root inwards towards the center of the tooth. As stated in col. 1, lines 40-44, "...a gear wheel formed from a pressed and sintered powder metal blank is surface hardened by rolling in the tooth root and flank regions to establish densification in the range of 90 to 100 percent to a depth of at least 380 microns." In

Applicant's invention, the increased hardness extends in the axial direction, along the tooth profile, as shown in Applicant's figure 2, and is therefore, rotated ninety degrees from the increased hardness in Cole et al.

The combination of Thompson in view of Cole et al. would result in a gear wheel with teeth having a reinforcing member or cap that covers the entire tooth profile. The cap covering the teeth would have a side of the cap be a greater density than the rest of the profile or the side of the cap and the root between adjacent teeth would be a greater density than the rest of the profile in the radial direction. Or, alternatively, the combination of Thompson in view of Cole et al. would result in a tooth that has the flank, the root, or the flank and the root densified in the radial direction and then the entire outer profile of the tooth covered by a reinforcing member or cap.

The above combinations do not result in Applicant's invention, nor does Thompson in view of Cole et al. teach or suggest Applicant's invention as described in amended claim 1 or the combination of amended claim 1 and dependent claim 4. Amended claim 1 states:

"A sprocket for a silent chain having a plurality of link plates comprising a plurality of teeth around a periphery of the sprocket, each of the plurality of teeth ~~comprising~~ having:

a tooth profile with a surface for contacting the plurality of link plates of the silent chain, the tooth profile comprising:

a first side portion having a first hardness on one side of a central portion having a second hardness, and a second side portion, having the first hardness on a side of the central portion, opposite the first side portion, wherein the first hardness is greater than the second hardness and wherein the first side portion and the second side portion comprise the surface for contacting the plurality of link plates of the silent chain."

Applicant's dependent amended claim 4 states,

"The sprocket of claim 1, wherein the sprocket and the plurality of teeth are formed of a sintered alloy and the first side portions and the second side portions of the plurality of teeth have a density greater than the central portions of the plurality of teeth."

Neither of the patent or the combination of Thompson in view of Cole et al. teaches or suggests, a tooth profile with a surface for contacting the plurality of link plates of the silent chain, the tooth profile comprising: a first side portion having a first hardness on one side of a central portion having a second hardness, and a second side portion, having the first hardness on a side of the central portion, opposite the first side portion, wherein the first hardness is greater than the second hardness and wherein the first side portion and the second side portion comprise the surface for contacting the plurality of link plates of the silent chain. Therefore, claim 1 is not obvious over Thompson in view of Cole.

Therefore, claim 4, being dependent on and further limiting independent claim 1 should also be allowable for that reason, as well as for the additional recitations it contains. Reconsideration and withdrawal of the rejection are respectfully requested.

### **Conclusion**

Applicant believes the claims, as amended, are patentable over the prior art, and that this case is now in condition for allowance of all claims therein. Such action is thus respectfully requested. If the Examiner disagrees, or believes for any other reason that direct contact with Applicants' attorney would advance the prosecution of the case to finality, he is invited to telephone the undersigned at the number given below.

"Recognizing that Internet communications are not secured, I hereby authorize the PTO to communicate with me concerning any subject matter of this application by electronic mail. I understand that a copy of these communications will be made of record in the application file."

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